

I CLAIM:

1. An instrument for aligning a collimated x-ray beam relative to an x-ray film and a target tooth of an animal patient to produce dental radiographs in accordance with the bisecting-angle technique, wherein the instrument is configured to align a longitudinal axis of the x-ray beam orthogonal to a bisecting plane lying approximately midway between a target plane defined by the target tooth and an x-ray film plane defined by the x-ray film.

2. An instrument as recited in claim 1, including a first handle selectively orientable at a first known angle relative to the x-ray film plane, and a second handle selectively orientable at a second known angle relative to the target plane, and wherein orientation of the handles is correlated to alignment of the longitudinal axis of the x-ray beam.

3. An instrument as recited in claim 2, wherein the first handle is orientable parallel to the x-ray film plane, and wherein the second handle is orientable parallel to the target plane.

4. An instrument as recited in claim 3, wherein the second handle is orientable coincident with the target plane.

5. An instrument as recited in claim 3, wherein the second handle is pivotally attached to the first handle to form a variable angle between the handles to selectively orient the second handle parallel to the target plane.

6. An instrument as recited in claim 5, including a bisecting member attached to the handles, wherein the bisecting member is oriented substantially parallel to the bisecting plane when the first handle is oriented parallel to the x-ray film plane and the second handle is oriented parallel to the target plane.

7. An instrument as recited in claim 6, wherein the bisecting member is attached to the handles by a pair of rigid coupling members and wherein an equal length of each coupling member separates the bisecting member from the handles.

8. An instrument as recited in claim 7, wherein each coupling member is pivotally attached to one of handles, and wherein the coupling members are pivotally attached to the bisecting member and to each other.

9. An instrument as recited in claim 6, including an x-ray alignment assembly attached to the bisecting member and configured to align an x-ray collimator.

10. An instrument as recited in claim 9, wherein the x-ray alignment assembly includes a first end portion attached to the bisecting member, and a second end portion configured to engage a targeting ring for aligning the x-ray collimator.

11. An instrument as recited in claim 10, wherein the first end portion is attached substantially orthogonally to the bisecting member, and wherein the second end portion is aligned substantially parallel to the bisecting plane when the first handle is oriented parallel to the x-ray film plane and the second handle is oriented parallel to the target plane.

12. An instrument as recited in claim 2, wherein the first handle is attachable to a film holder configured to selectively hold the x-ray film against the target tooth.

13. An instrument as recited in claim 12, further comprising a film holder support including a first support member for selectively engaging and supporting the film holder, a second support member spaced apart from the first support member for engaging one or more non-target teeth, and a connecting member coupling the support members and allowing distance between the support members to be selectively varied and held fixed.

14. A method of aligning an x-ray beam to produce dental radiographs of a target tooth of an animal patient in accordance with the bisecting-angle technique, comprising:

placing an x-ray film into the patient's mouth;

attaching an alignment instrument to the x-ray film; and

aligning a longitudinal axis of the x-ray beam orthogonal to a bisecting plane correlated to an orientation of the alignment instrument, the bisecting plane lying approximately midway between a target plane defined by the target tooth and an x-ray film plane defined by the x-ray film.

15. A method as recited in claim 14, further comprising orienting a reference portion of the alignment instrument at a known reference angle relative to the bisecting plane, and wherein aligning the longitudinal axis of the x-ray beam orthogonal to the bisecting plane includes aligning the longitudinal axis of the x-ray beam at an alignment angle relative to the reference portion and correlated to the reference angle.

16. A method as recited in claim 15, wherein the reference angle is substantially a right angle and the alignment angle is substantially zero.

17. A method as recited in claim 15, wherein the reference angle is substantially zero and the alignment angle is substantially a right angle.

18. A method as recited in claim 15, wherein orienting the reference portion includes orienting a first handle of the alignment instrument at a first known angle relative to the x-ray film plane, and orienting a second handle of the alignment instrument at a second known angle relative to the target plane.

19. A method as recited in claim 18, wherein the first and second angles are both substantially zero, so that the first handle of the instrument is oriented substantially parallel to the x-ray film plane and the second handle of the instrument is oriented substantially parallel to the target plane.

20. A method as recited in claim 19, wherein attaching the instrument to the film includes attaching the first handle to a film holder engaged with the film.

21. A method as recited in claim 20, wherein orienting the second handle with the target plane includes pivoting the second handle relative to the first handle.

22. A method as recited in claim 19, wherein orienting the second handle includes placing a guiding member attached to the second handle against the target tooth, and orienting the guiding member to point in a desired direction with respect to the tooth.

23. A method as recited in claim 15, further comprising orienting an x-ray head targeting ring parallel to the bisecting plane.

24. A method as recited in claim 15, further comprising holding the x-ray film in place with a compressive force communicated from one or more non-target teeth through a connecting member to the x-ray film.